Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1. (Previously Presented) Apparatus for determining the position of an object within a body of a subject, comprising:
at least one acoustic wave generator, adapted to direct a first acoustic wave toward the body at a first frequency;
an acoustic tag adapted to be fixed to the object, the tag being wireless and comprising a shell defining a cavity therein and a medium contained within the shell, such that responsive to incidence thereon of the first acoustic wave, the tag emits a second acoustic wave at a second frequency, different from the first frequency;
one or more detectors, adapted to detect the second acoustic wave and to generate signals responsive thereto; and
a signal processor, coupled to process the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 2. (Canceled)

Claim 3. (Original) Apparatus according to claim 1, wherein the tag has an axis and is constructed so that responsive to incidence thereon of the first acoustic wave, the tag emits the second acoustic wave at the second frequency with a first pattern of intensity variation relative to the axis, and a third acoustic wave at a third frequency, different from the first and second frequencies, with a second pattern of intensity variation relative to the axis, and wherein responsive to detection of the second and third

acoustic waves by the one or more detectors, the signal processor is adapted to determine an angular orientation of the object responsive to a difference between the first and second patterns.

Claim 4. (Previously Presented) Apparatus for determining the position of an object within a body of a subject, comprising:

at least one acoustic wave generator, adapted to direct acoustic waves toward the body over a range of frequencies, including at least first and second frequencies;

an acoustic tag adapted to be fixed to the object, the tag being wireless and constructed so as to reflect the acoustic waves at the first frequency with a first spatial pattern of intensity variation, and to reflect the acoustic waves at the second frequency with a second spatial pattern of intensity variation;

one or more detectors, adapted to detect the reflected acoustic waves and to generate signals responsive thereto; and

a signal processor, coupled to process the signals so as to determine six-dimensional position and orientation coordinates of the object in the body responsive to a difference between the first and second spatial patterns.

Claim 5. (Canceled)

Claim 6. (Original) Apparatus according to claim 4, wherein the tag has an axis, and wherein the tag is constructed so that in the first spatial pattern, the acoustic waves are reflected predominantly in a first direction relative to the axis, while in the second spatial pattern, the acoustic waves

are reflected predominantly in a second direction relative to the axis, different from the first direction.

Claim 7. (Canceled)

Claim 8. (Previously Presented) Apparatus for determining the position of an object within a body of a subject, comprising:

at least one acoustic wave generator, adapted to direct acoustic waves toward the body;

a transducer adapted to be fixed to the object, the transducer being wireless and constructed to emit electromagnetic radiation responsive to the acoustic waves with a response that varies depending on an orientation angle of the transducer relative to the at least one acoustic wave generator;

one or more detectors, adapted to detect the electromagnetic radiation emitted by the transducer and to generate signals responsive thereto; and

a signal processor, coupled to process the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 9. (Original) Apparatus according to claim 8, wherein the transducer comprises a piezoelectric crystal, which is polarized so as to respond anisotropically to the acoustic waves.

Claim 10. (Original) Apparatus according to claim 9, wherein the piezoelectric crystal has multiple opposing faces, and wherein the transducer further comprises a plurality of resonant circuit elements having different, respective resonant frequencies, the circuit elements being coupled between respective pairs of the faces of the crystal so as to emit the electromagnetic radiation at the different resonant frequencies with respective amplitudes that

vary responsive to the orientation angle of the transducer.

Claim 11. (Original) Apparatus according to claim 10, wherein the circuit elements comprise coils having different, respective values of inductance.

Claim 12. (Canceled)

Claim 13. (Original) Apparatus according to claim 8, wherein the transducer comprises a magnetostrictive element, which is shaped so as to respond anisotropically to the acoustic waves.

Claim 14. (Original) Apparatus according to claim 13, wherein the magnetostrictive element is shaped to as to focus the electromagnetic radiation that it emits.

Claim 15. (Canceled)

Claim 16. (Previously Presented) Apparatus for determining the position of an object within a body of a subject, comprising:

at least one field generator, adapted to generate an electromagnetic field within the body;

a transducer adapted to be fixed to the object, the transducer being wireless and constructed to emit acoustic waves responsive to the electromagnetic field;

one or more acoustic detectors, adapted to detect the acoustic waves emitted by the transducer and to generate signals responsive thereto; and

a signal processor, coupled to process the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 17. (Original) Apparatus according to claim 16, wherein the transducer comprises a piezoelectric crystal, which is

polarized so as to respond anisotropically to the electromagnetic field.

Claim 18. (Original) Apparatus according to claim 17, wherein the piezoelectric crystal has multiple opposing faces, and wherein the transducer further comprises a plurality of resonant circuit elements having different, respective resonant frequencies, the circuit elements being coupled between respective pairs of the faces of the crystal so as to cause the crystal to emit the acoustic waves at the different resonant frequencies with respective amplitudes that vary responsive to the orientation angle of the transducer.

Claim 19. (Original) Apparatus according to claim 18, wherein the circuit elements comprise coils having different, respective values of inductance.

Claim 20. (Original) Apparatus according to claim 16, wherein the transducer comprises a magnetoacoustic transducer.

Claim 21. (Original) Apparatus according to claim 20, wherein the transducer comprises a magnetostrictive material.

Claim 22. (Original) Apparatus according to claim 20, wherein the magnetoacoustic transducer is shaped so as to respond anisotropically to the electromagnetic field, so that the acoustic waves emitted thereby vary as a function of an orientation angle of the transducer relative to the at least one field generator, and wherein the signal processor is adapted to determine the orientation angle of the object responsive to the signals.

Claim 23. (Original) Apparatus according to claim 22, wherein the magnetoacoustic element is shaped to as to focus the electromagnetic radiation that it emits.

Claim 24. (Canceled)

Claim 25. (Previously Presented) A method for determining the position of an object within a body of a subject, comprising:

fixing an acoustic tag to the object, the tag being wireless and comprising a shell defining a cavity therein and a medium contained within the shell, such that responsive to incidence thereon of a first acoustic wave at a first frequency, the tag emits a second acoustic wave at a second frequency, different from the first frequency;

inserting the object into the body of the subject;

directing the first acoustic wave toward the body at the first frequency, causing the tag to emit the second acoustic wave at the second frequency;

detecting the second acoustic wave and generating signals responsive thereto; and

processing the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 26. (Canceled)

Claim 27. (Original) A method according to claim 25, wherein the tag has an axis and is constructed so that responsive to incidence thereon of the first acoustic wave, the tag emits the second acoustic wave at the second frequency with a first pattern of intensity variation relative to the axis, and a third acoustic wave at a third frequency, different from the first and second frequencies, with a second

pattern of intensity variation relative to the axis, and comprising detecting the third acoustic wave and generating the signals responsive thereto, wherein processing the signals comprises determining an angular orientation of the object responsive to a difference between the first and second patterns.

Claim 28. (Previously Presented) A method for determining the position of an object within a body of a subject, comprising:

fixing an acoustic tag to the object, the tag being wireless and constructed so as to reflect acoustic waves at a first frequency with a first spatial pattern of intensity variation, and to reflect acoustic waves at a second frequency with a second spatial pattern of intensity variation;

inserting the object into the body of the subject;

directing the acoustic waves toward the body over a range of frequencies, including at least the first and second frequencies;

detecting the reflected acoustic waves and generating signals responsive thereto; and

processing the signals so as to determine six-dimensional position and orientation coordinates of the object in the body responsive to a difference between the first and second spatial patterns.

Claim 29. (Canceled)

Claim 30. (Original) A method according to claim 28, wherein the tag has an axis, and wherein the tag is constructed so that in the first spatial pattern, the acoustic waves are reflected predominantly in a first direction relative to the axis, while in the second spatial pattern, the acoustic waves

are reflected predominantly in a second direction relative to the axis, different from the first direction.

Claim 31. (Canceled)

Claim 32. (Previously Presented) A method for determining the position of an object within a body of a subject, comprising:
fixing a transducer to the object, the transducer being wireless and configured to emit electromagnetic radiation responsive to acoustic waves incident thereon with a response that varies depending on an orientation angle of the transducer relative to a source of the acoustic waves;
inserting the object into the body of the subject;
directing the acoustic waves toward the body;
detecting the electromagnetic radiation emitted by the transducer responsive to the acoustic waves, and generating signals responsive thereto; and
processing the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 33. (Original) A method according to claim 32, wherein the transducer comprises a piezoelectric crystal, which is polarized so as to respond anisotropically to the acoustic waves.

Claim 34. (Original) A method according to claim 33, wherein the piezoelectric crystal has multiple opposing faces, and wherein the transducer further comprises a plurality of resonant circuit elements having different, respective resonant frequencies, the circuit elements being coupled between respective pairs of the faces of the crystal so as to emit the electromagnetic radiation at the different resonant frequencies with respective amplitudes that

vary responsive to the orientation angle of the transducer.

Claim 35. (Original) A method according to claim 34, wherein the circuit elements comprise coils having different, respective values of inductance.

Claim 36. (Original) A method according to claim 32, wherein processing the signals further comprises determining position coordinates of the object responsive to the signals.

Claim 37. (Original) A method according to claim 32, wherein the transducer comprises a magnetostrictive element, which is shaped so as to respond anisotropically to the acoustic waves.

Claim 38. (Original) A method according to claim 37, wherein the magnetostrictive element is shaped to as to focus the electromagnetic radiation that it emits.

Claim 39. (Canceled)

Claim 40. (Previously Presented) A method for determining the position of an object within a body of a subject, comprising:

fixing a transducer to the object, the transducer being wireless and configured to emit acoustic waves responsive to an electromagnetic field that is incident thereon;

inserting the object into the body of the subject;

generating the electromagnetic field within the body;

detecting the acoustic waves emitted by the transducer and generating signals responsive thereto; and

processing the signals so as to determine six-dimensional position and orientation coordinates of the object in the body.

Claim 41. (Original) A method according to claim 40, wherein the transducer comprises a piezoelectric crystal, which is polarized so as to respond anisotropically to the electromagnetic field.

Claim 42. (Original) A method according to claim 41, wherein the piezoelectric crystal has multiple opposing faces, and wherein the transducer further comprises a plurality of resonant circuit elements having different, respective resonant frequencies, the circuit elements being coupled between respective pairs of the faces of the crystal so as to cause the crystal to emit the acoustic waves at the different resonant frequencies with respective amplitudes that vary responsive to the orientation angle of the transducer.

Claim 43. (Original) A method according to claim 42, wherein the circuit elements comprise coils having different, respective values of inductance.

Claim 44. (Original) A method according to claim 40, wherein the transducer comprises a magnetoacoustic transducer.

Claim 45. (Original) A method according to claim 41, wherein the transducer comprises a magnetostrictive material.

Claim 46. (Original) A method according to claim 41, wherein the magnetoacoustic transducer is shaped so as to respond anisotropically to the electromagnetic field, so that the acoustic waves emitted thereby vary as a function of an orientation angle of the transducer relative to the at least one field generator, and wherein processing the signals comprises determining the orientation angle of the object responsive to the signals.

Claim 47. (Original) A method according to claim 46, wherein the magnetoacoustic element is shaped to as to focus the electromagnetic radiation that it emits.

Claim 48. (Canceled)